

Title (en)
Vertical bipolar transistor.

Title (de)
Vertikaler Bipolartransistor.

Title (fr)
Transistor bipolaire vertical.

Publication
EP 0354153 A2 19900207 (EN)

Application
EP 89480105 A 19890629

Priority
US 22673888 A 19880801

Abstract (en)
A Compressed vertical bipolar transistor configuration that eliminates one side of the standard symmetrical base contact, while also eliminating the requirement for a collector contact reach-thru. The bipolar transistor comprises: a collector layer (12); a base layer (14) disposed over the collector layer; an emitter layer (16) disposed over the base layer; a first sidewall insulating layer (18) disposed adjacent to and in contact with one side of the emitter layer, the base layer, and at least a portion of the collector layer; a second sidewall insulating layer (20) disposed adjacent to and in contact with another side of the emitter layer and at least a portion of the base layer; and a base contact extension layer (22) formed from heavily doped semiconductor material of the same conductivity type as the base layer, said base contact extension layer being in contact with and extending laterally from another side of the base layer. The structure further includes a base contact interconnect (24) disposed on a surface of the base contact extension layer and; a collector contact extension layer (26) formed from doped semiconductor material with the same conductivity type as the collector layer, with the collector contact extension layer being in contact with the collector layer and extending laterally from or below the one side thereof; and a collector contact interconnect (29) disposed on a surface of the collector contact extension layer and separated from said emitter layer by only one or more insulating layers.

IPC 1-7
H01L 29/52; H01L 29/60; H01L 29/72

IPC 8 full level
G03C 3/00 (2006.01); **H01L 21/331** (2006.01); **H01L 29/08** (2006.01); **H01L 29/10** (2006.01); **H01L 29/73** (2006.01); **H01L 29/732** (2006.01); **H01L 29/737** (2006.01)

CPC (source: EP KR US)
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Cited by
EP0476380A1; EP0468271A1; US5399509A; WO03050881A3; US7015085B2; US7414298B2; US6703685B2

Designated contracting state (EPC)
CH DE ES FR GB IT LI NL SE

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EP 89480105 A 19890629; BR 8903812 A 19890731; CA 601597 A 19890602; CN 89106258 A 19890731; DE 68906095 T 19890629; JP 14977489 A 19890614; JP 18564294 A 19940808; KR 890010839 A 19890731; MY PI19891036 A 19890731; US 22673888 A 19880801